# Petroclival meningiomas. Experience in an Argentinian Center

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## Introduction

Petroclival meningiomas are challenging tumors located in a critical region at the skull base. These tumors often present with specific clinical manifestations due to their proximity to vital structures such as cranial nerves (CN) and major blood vessels.
Management often requires a multidisciplinary approach and due to its complexity and risks, some studies even propose stereotactic radiosurgery (SRS) as an alternative to surgery.
This study aims to demonstrate our experience in the treatment of petroclival meningiomas.

## Methods and Materials

Single-center, retrospective study of a cohort of 64 surgical patients operated for petroclival meningioma in a third-level center in Buenos Aires, Argentina, between 2010 and 2023.
Medical records, imaging studies, and surgical protocols were reviewed.
Patients with an age greater than 18 years-old, a mean follow-up of at least 6 months and adequate pre- and postoperative contrast-enhanced volumetric MRI were included.

## Results

A total of **53** patients met the inclusion criteria with a mean age of 52 years (range 25-78), a predominance of females (73.58%), and a mean follow-up of **54.6 months** (range 6-182).
Headaches, facial numbness, and gait impairment were the most frequent symptoms at consultation.
Dysphagia and dysphonia were seen in 22.6%. Preoperative mean **KPS** was 86.
The mean tumor volume was 24.8 cm3 (range 1.8-67.3)

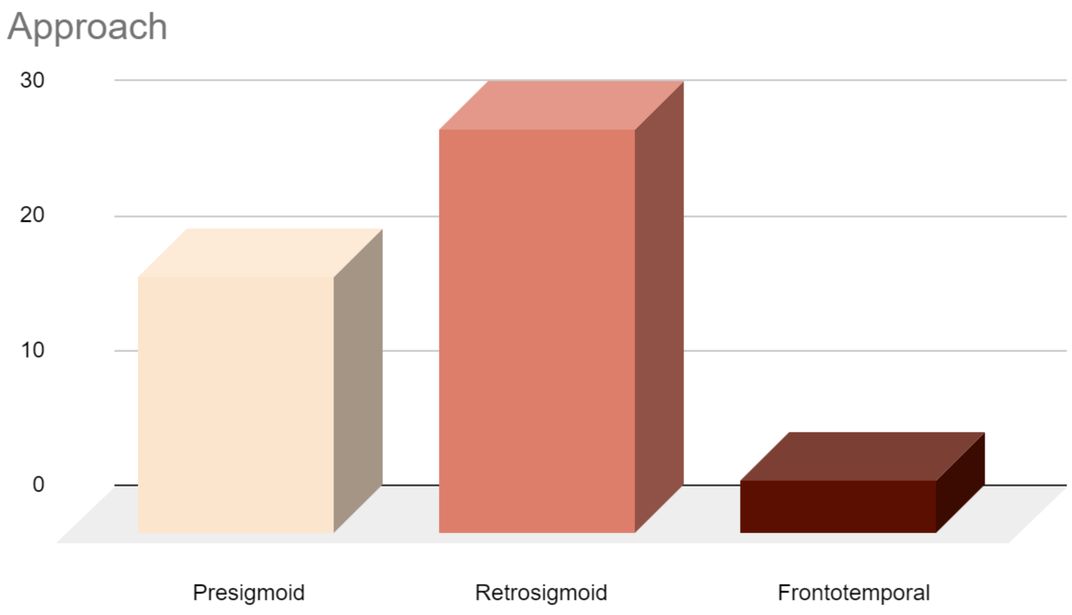


**Figure 1. Retrosigmoid** approach was the main route chosen for tumor resection (56.6%) followed by presigmoid (35.85%) and frontotemporal approach (7.5%).

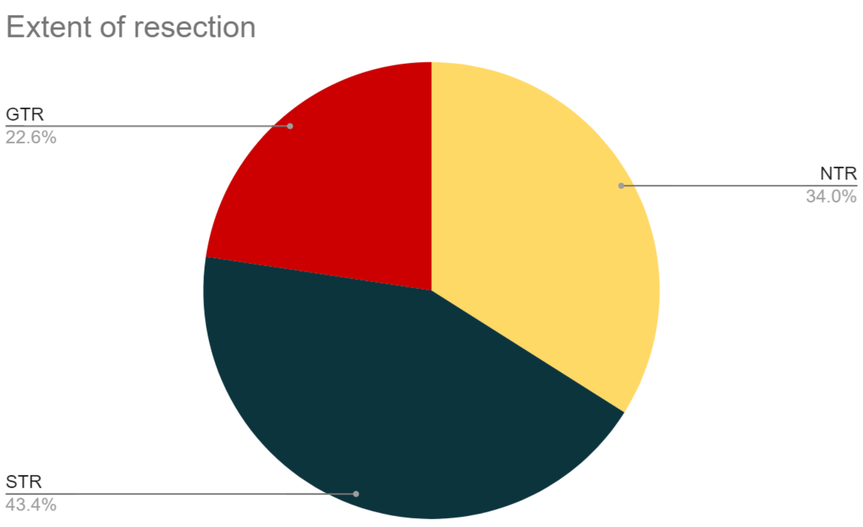


**Figure 2.** Graph demonstrating EOR rates. Simpson I-III resection rate was **64.15%**. Residual tumor was managed with **gamma-knife in 52.8%** of cases.

## Results

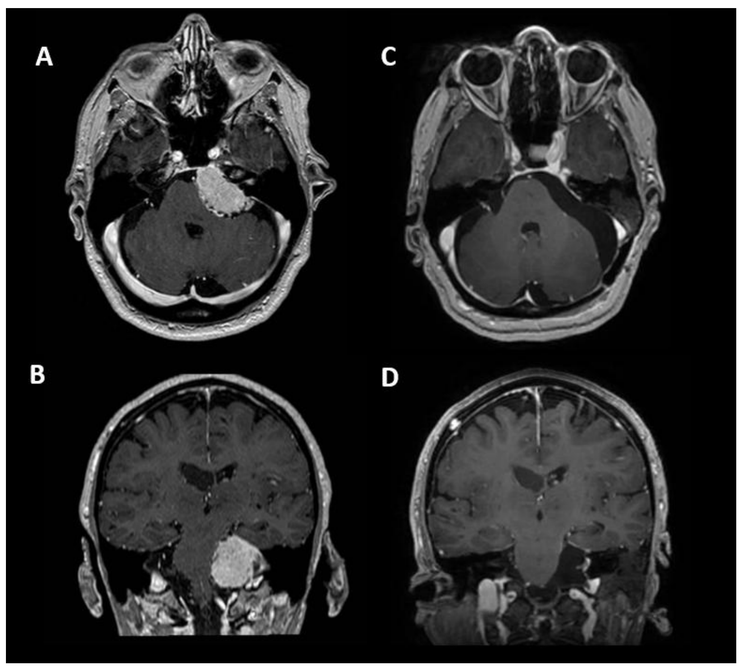


**Figure 3.** Preoperative (A-B) and postoperative (C-D) MRI with gadolinium demonstrating GTR of petroclival meningioma through a retrosigmoid approach.

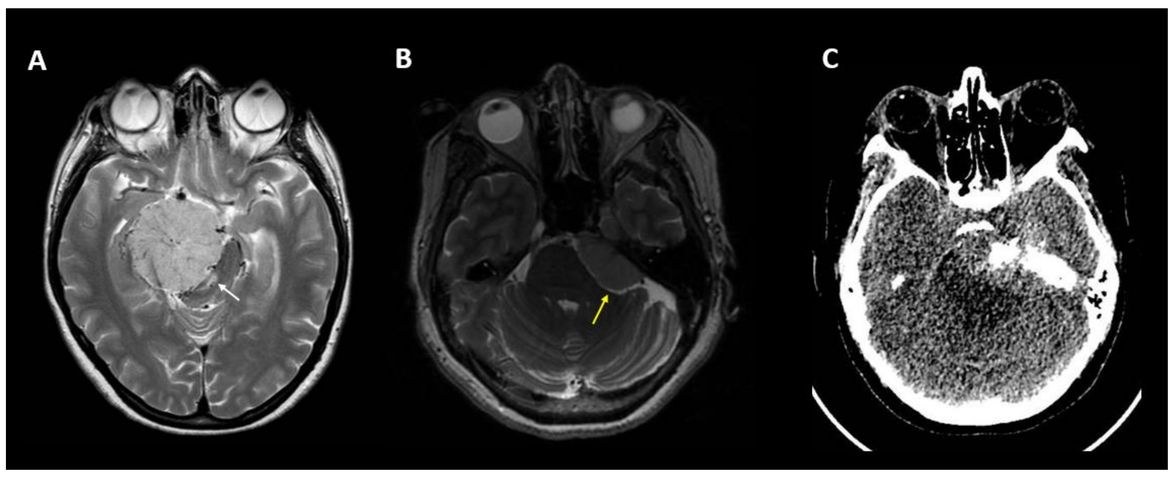


**Figure 4.** T2 weighted MRI (**A** and **B**) depicting well defined tumor cleft (**B yellow arrow**) and loss of it with brainstem edema (**A white arrow**). Figure **C** demonstrates tumor calcifications. Brainstem compression was seen in 92.45% of cases with edema in 18.8%. Calcifications were noticed in 16.98% of tumors.

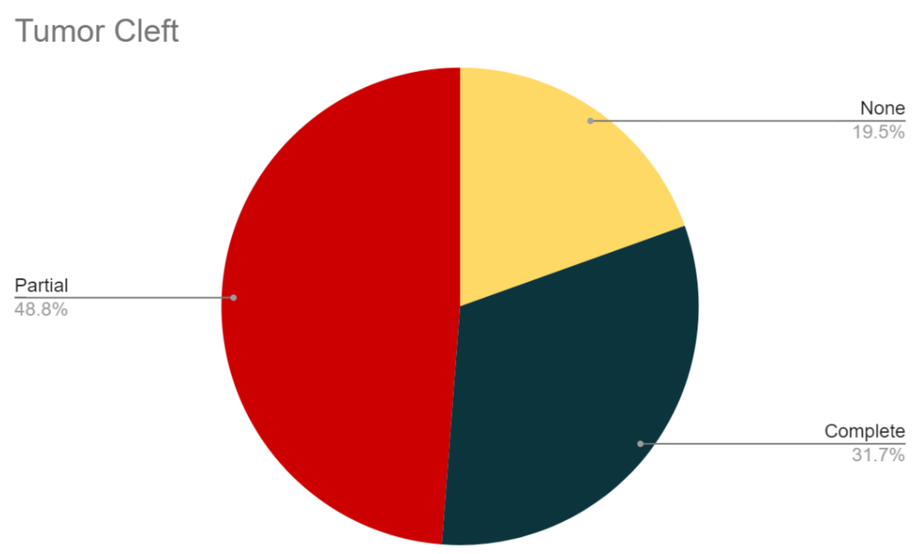


**Figure 4.** A complete cleft between the tumor and the brainstem was detected in the 31.7% of the sample. Almost the half of the population exhibited a partial cleft, and the minority of the patient presented no natural plane between both tissues.

The mean stay was **9.9 days.** Most frequent complications seen were new postoperative **CN deficit** (75%) and **meningitis** (11.32%) of which **3.7%** were infectious. Serious complications such as vasospasm, ischemia, or hematomas were seen in 3.7% respectively with **two** patients needing surgery.
Mean early postoperative and late **KPS** were 78.8 and 84.15 respectively with a mean late **GOS** of 4.56.
A total of 22.64% of patients needed discharge to a **rehabilitation** center, and complete improvement in CN deficits was seen in 28.3% and partial in 52.83% of cases.

## Conclusions

Surgery is considered the mainstay of treatment for petroclival meningiomas. However, due to the complex anatomy and risk for neurological deficits, careful preoperative planning and precise intraoperative techniques are paramount for good outcomes. Leaving a residual tumor in favor of minimizing the risk of permanent morbidity is often needed, with the aid of postoperative advanced stereotactic radiosurgery techniques.

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